DOCUMENT RESUME

ED 373 312 CS 011 811

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TITLE Differences in Cognitive Style and Student Reading Comprehension.
PUB DATE Apr 94
NOTE 13p.; Paper presented at the Annual Meeting of the American Educational Research Association (75th, New Orleans, LA, April 4-8, 1994).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Black Students; *Cognitive Style; High Schools; High School Students; Lateral Dominance; *Reading Achievement; *Reading Comprehension; Reading Research; *Sex Differences
IDENTIFIERS *African Americans

ABSTRACT

A study replicated a study done in 1986: both studies determined the relationship among cognitive laterality, gender, and reading comprehension for African-American students, and the relationship between hemispheric preference and reading comprehension or gender. A standardized reading test to measure reading comprehension and the Cognitive Laterality Battery were administered to a sample of 72 male and 70 female African-American students in 1986 and 40 males and 41 females in 1994. Subjects were 16 to 18 years old. Both studies had similar results: no relationship was found between reading comprehension and cognitive laterality for either females or males. Nor was there any difference between the reading scores of females and males. However, there was a significant difference in cognitive style. The laterality of the females was significantly different from the laterality of the males with the females showing a left-laterality preference; the African-American males only marginally favored right laterality. (Contains 23 references and one table of data.) (RS)

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ED 373 312

Differences in Cognitive Style and Student Reading Comprehension

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1994 AERA Annual Meeting
New Orleans, LA
April 4-8, 1994

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Abstract

This research replicates a study done in 1986 by the first author. Both studies determined the relationship between cognitive laterality, gender and reading comprehension for African-American students. The studies also examined gender differences in cognitive laterality and reading comprehension. Four null hypotheses were tested.

Both studies had similar results. There was no relationship between reading comprehension and cognitive laterality for either females or males. Nor was there any difference between the reading scores of females and males. However, there was a significant difference in cognitive style. The laterality of the females was significantly different from the laterality of the males with the females showing a left-laterality preference; the African-American males only marginally favored right laterality.

Differences in Cognitive Style and

Student Reading Comprehension

Searching the literature indicated a dearth of educational research that dealt specifically with high school African-American students and their academic achievement. This was true in 1986 when the original research study was completed and has not improved even though the academic status of African-American students, and particularly the African-American male, continues to decline (Bridges, 1986; Gibbs, 1988; Hatchett, 1986; "Hearing on," 1990; Keller, 1987; Levin & Havighurst, 1984; "The African-American Male," 1990; Wesson, 1994). In fact during the years 1990-1992, both the National Association for the Advancement of Colored People (NAACP) and U.S. Congress held conferences on the "endangered African-American male," which brought national attention to the issue (Narine, 1992) .

There seem to be differences in male-female academic achievement ("Educating Black Male," 1988). Some studies indicate that black females achieve more than black males early in their academic careers. In Chicago by the third grade, black males trailed all other groups in math in contrast to every other ethnic group where males significantly outperformed females ("Odds Stacked Against," 1990). By age 13, 44% of black males were one

or more years below grade level, while within this same age group only 33% of black females, 30% of white males and 22% of white females were one or more years below grade level (Simmons & Mitchell, 1990).

These are complex issues, yet there is limited amount of research to help schools address these issues. A search in the 1982-92 ERIC database was insightful. The information on black students is meager and can be summarized as follows: of the 24,219 records on achievement, there were only 251 records on "black achievement," 11 records on "black achievement and males" and 26 on "academic achievement and black females." There were 44 records on "academic achievement and black males." Of the 746 records on at-risk persons, 9 were records on "at-risk black males;" of 84,373 records on "at-risk programs," there were only 7 records on programs for "at-risk black males." Of 1,513 records on creativity, there is 1 record on "creativity and black males," and of 4,400 records on learning strategies there was 1 record on "learning strategies of black males" and 20 records on "black students and cognitive style."

Dramatic changes have taken place since the original split-brain research (Sperry, 1968) and the resultant hemispheric speculations. Changes that may be attributed to this original research include recognition of different learning styles (Dunn, 1990), multiple intelligences (Gardner, 1982) and Koestler's idea that "everything is a part of something bigger and is itself made up of parts" (cited in Caine & Caine, 1991). Recently Caine and Caine (1991) have focused attention on the correlation between understanding brain processes and effective teaching methods. Even though there is little agreement about the relationships among cognitive laterality, gender and reading achievement (Bannatyne, 1971; Blaha, 1982; Denno, 1983; Diamond, 1988; Gardner, 1982; Harness, 1984; Kaufman, 1979; Levy, 1985; Maccoby & Jacklin, 1985; Synmes & Rapoport, 1974), studies that rely on brain research suggest that individualizing instruction and allowing students to interact in enriched environments are critical components of exemplary instruction (Hart, 1983; Bennett, Diamond, Krech & Rosenzweig, 1964). The purpose of the present study is to discover if there are similarities and differences in the ways students process information by analyzing the preferred cognitive processing mode of African-American high school students

and determining the relationship between hemispheric preference and reading comprehension or gender.

Methods

A standardized reading test to measure reading comprehension and the Cognitive Laterality Battery were administered to a sample of African-American students in 1986 and 1994. These tests were administered in 1986 to seventy-two (72) males and seventy (67) females, ages 16-18; in 1986 the standardized reading test used to measure reading comprehension was the Advanced-2 Level of the Metropolitan Achievement Tests, Sixth Edition, (MAT-6). In 1994 the tests were administered to forty (40) males and forty-one (41) females, ages 16 to 18. The Stanford Test of Academic Skills, Third Edition, was the standardized reading test administered to measure reading comprehension. In the 1986 sample, low socioeconomic status was established if the student qualified for the school's free lunch program. Although the same school and grade level were sampled, free lunch status figures for 1994 were not available for individual students. However, about eighty percent of the black school population qualified for free lunch.

This study replicates the study done in 1986 by the first author. Both studies determined the relationship among cognitive laterality, gender and

reading comprehension for African-American students. They also examined gender differences in cognitive laterality and reading comprehension. Four null hypotheses were tested.

Hypothesis 1. There is no significant relationship between reading comprehension and cognitive laterality for the males in this population.

Hypothesis 2. There is no significant relationship between reading comprehension and cognitive laterality for the females in this population.

Hypothesis 3. There is no statistically significant difference between the cognitive laterality of males and females in this population.

Hypothesis 4. There is no statistically significant difference between the reading comprehension of males and females in this population.

Findings

In 1986 and 1994, hypotheses 1,2, and 4 were retained. Hypothesis 3 was rejected. Both sets of data indicate that there was no statistically significant correlation between reading comprehension as measured by the Reading Comprehension Test of the MAT-6 and Stanford Test of Academic Skills and cognitive laterality of either males or females in the samples. The results of the t-test indicated that there was no significant difference between

the reading comprehension of the males and females, but there was a significant difference between the cognitive laterality of the males and females.

SUMMARY OF RESULTS

Cognitive Laterality and Reading Among Black High School Students				
Year	Reading and Laterality		Mean Comprehension	Mean Laterality
	Male	Female	Between Genders	Between Genders
1986	r = -.05	r =-.074	t = 1.09	t =-5.27**
1994	r = .015	r = .146	t = - .68	t = 2.70 *

Note: 1986: N=72 males, 67 females. 1994: N=40 males, 41 females.
Note: Correlations were Pearson r
*P ≤ .01 **P ≤ .001

Conclusions

Although schools might have traditionally relied on left lateral orientations and it has been suggested that African-American students may not fit these expectations (Hale-Benson, 1983; Hilliard, 1992; Dunn, 1990), these two studies do not necessarily support that position. These findings indicate that an orientation toward left or right laterality is not related to reading comprehension for either males or females. The data from the original and replicated studies do suggest that male and female students have a significantly different cognitive laterality; the female students showed a preference for left

different cognitive laterality; the female students showed a preference for left laterality, and the males had a marginally right laterality preference.

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